#5 GAU 1655 #
9-11-01 JW

PATENT

Attorney Docket No.: A-58762-20/RFT/RMS/RMK

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Meade et al.

Serial No. 09/866,067

Filed: May 23, 2001

For: NUCLEIC ACID MEDIATED ELECTRON TRANSFER

Examiner: Zitomer, S.

Group Art Unit: 1655

CERTIFICATE OF MAILING

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Dated: 8.30.01

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Christine P. Peters

INFORMATION DISCLOSURE STATEMENT AND STATEMENT OF RELATEDNESS

Assistant Commissioner
for Patents
Washington, DC 20231

Sir:

In satisfaction of the duty of disclosure under 37 C.F.R. § 1.56, and in accordance with the provisions of 37 C.F.R. §§ 1.97 and 1.98, Applicants wish to draw the attention of the U.S. Patent and Trademark Office to the reference cited on the accompanying form PTO-1449.

Since copies of all the references except 1, 6, 7, 12, 26, 28, 30, 34-38, 42-43, 46, 48, 50, 52, 57-59, 61-62, 64-65, 67, 69-75, 77, 79-81, 83, 84, 87-100, 109, 111, 116, 131, 132, 135, 138, 148-149, 155, 162, 166, 171, 173, 183-186, 191, 193-194, 196, 205, 207, 212, 213, 221-222, and 229 were provided either by the Applicant or the Examiner in the following related U.S. Applications; Serial No. 09/454,498, filed December 6, 1999; 08/946,679, filed October 8, 1997; U.S.S.N. 08/709,263, filed September 9, 1996; and U.S.S.N. 08/166,036, filed December 10, 1993, upon which the instant application relies for its priority date, in accordance with 37 C.F.R. § 1.98(d), no copies of these references are enclosed.

With respect to patent applications, the applicants point out their duty under M.P.E.P. §2001.06(b) to disclose relevant patent applications of which they are aware. To this end, the applicants draw the Examiner's attention to the following patent applications;

1. U.S.S.N. 08/312,388, filed September 26, 1994, now Patent Number 5,620,850; U.S.S.N. 08/786,187, filed January 21, 1997; U.S.S.N. 09/296,111, filed April 21, 1999; and 09/296,078, filed April 21, 1999.

2. United States Serial Number 08/743,798, filed November 5, 1996; U.S.S.N. 08/873,978, filed June 12, 1997; U.S.S.N. 08/899,510, July 24, 1997; U.S.S.N. 08/911,085, filed August 14, 1997, now Patent Number 6,090,933; U.S.S.N. 09/557,577, filed April 21, 2000; and U.S.S.N. 09/577,429, filed May 22, 2000.

3. U.S.S.N. 08/786,153, filed January 21, 1997, now abandoned; U.S.S.N. 08/804,883, filed February 24, 1997, now abandoned; and U.S.S.N. 08/843,623, filed April 10, 1997.

4. U.S.S.N. 09/096,593, filed June 12, 1998.

5. U.S.S.N. 08/166,036, filed December 10, 1993, now Patent Number 5,591,578; U.S.S.N. 08/475,051, filed June 7, 1995, now Patent Number 5,824,473; U.S.S.N. 08/660,534, filed June 7, 1995, now Patent Number 5,770,369; U.S.S.N. 08/659,987, filed June 7, 1996, now abandoned; U.S.S.N. 08/709,265, filed September 6, 1996, now Patent Number 5,705,348; U.S.S.N. 08/709,263, filed September 6, 1996, now Patent Number 5,780,235; U.S.S.N. 08/873,598, filed June 12, 1997, now Patent Number 5,952,172; U.S.S.N. 08/946,679, filed October 8, 1997, now Patent Number 6,087,100; U.S.S.N. 09/100,507, filed June 19, 1998, now Patent Number 6,071,699; U.S.S.N. 09/306,749, filed

May 7, 1999; U.S.S.N. 09/306,737, filed May 7, 1999; U.S.S.N. 09/306,768, filed May 7, 1999; U.S.S.N. 09/454,498, filed December 6, 1999; U.S.S.N. 09/459,751, filed December 10, 1999; U.S.S.N. 09/459,191, filed December 10, 1999, now Patent Number 6,180,352; U.S.S.N. 09/454,497, filed December 6, 1999; U.S.S.N. 09/458,187, filed December 8, 1999; U.S.S.N. 09/545,227, filed April 7, 2000; U.S.S.N. 09/602,618, filed June 22, 2000; and U.S.S.N. 09/845,746, filed April 30, 2001.

None of the foregoing references are believed to disclose the invention as claimed. Nothing herein shall constitute an admission concerning the contents of any of the cited references, nor shall the inclusion of a reference herein be considered an admission that the reference constitutes prior art against the invention claimed in the above-identified application. Submission of the present document shall not be construed as an admission that a search has been made or that better art does not exist.

This Information Disclosure Statement is being submitted before the mailing date of a final action under 37 C.F.R. § 1.113. The required fee under 37 C.F.R. §1.17(p) is enclosed. The Commissioner is authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 06-1300
(Our Order No. A-58762-20/RFT/RMS/RMK).

Respectfully submitted,

FLEHR, HOHBACH, TEST,
ALBRITTON & HERBERT

Dated: 8/30/01

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 12

Complete if Known	
Application Number	09/866,067
Filing Date	May 23, 2001
First Named Inventor	Meade et al.
Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	A-58762-20/RFT/RMS/RMK

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	U.S. Patent Document Number	Kind Code[2] (*if known*)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	4,704,193		Bowers et al.	11/1987	
	2	4,707,352		Stavrianopoulos	11/1987	
	3	4,707,440		Stavrianopoulos	11/1987	
	4	4,711,955		Ward et al.	12/1987	
	5	4,755,458		Rabbani et al.	7/1988	
	6	4,787,963		MacConnell	11/1998	
	7	4,840,893		Hill et al.	6/1989	
	8	4,849,513		Smith et al.	7/1989	
	9	4,868,103		Stavrianopoulos et al.	9/1989	
	10	4,894,325		Englehardt et al.	1/1990	
	11	4,943,523		Stavrianopoulos	7/1990	
	12	4,945,045		Forrest et al.	07/1990	
	13	4,952,685		Stavrianopoulos	8/1990	
	14	4,994,373		Stavrianopoulos	2/1991	
	15	5,002,885		Stavrianopoulos	3/1991	
	16	5,013,831		Stavrianopoulos	5/1991	
	17	5,082,830		Brakel et al.	1/1992	

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	18	EP	0 234 938	A2	Cranfield Inst. of Tech.	2/1987		
	19	EP	0 229 943	B1	Molecular Biosystems Inc.	7/1987		
	20	EP	0 599 337	A2	Canon Kabushiki Kaisha	1/1994		
	21	EP	0 063 879	A2	Yale University	11/1982		
	22	EP	0 515 615		Boehringer Nannheim	9/1996		
	23	CA	2 090 904	A1	F. Hoffman-La Roche	9/1993		
	24	JP	238,166	A	Mitsubishi Corp.	1988	abstract	
	25	JP	6-41183	A2	Mitsubishi Corp.	1994		

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	26	5,089,112		Skotheim et al.	02/1992	
	27	5,175,269		Stavrianopoulos	12/1992	
	28	5,180,968		Bruckenstein et al.	01/1993	
	29	5,241,060		Englehardt et al.	8/1993	
	30	5,242,828		bergstrom et al.	09/1993	
	31	5,278,043		Bannwarth et al.	1/1995	
	32	5,312,527		Mikkelsen et al.	5/1994	
	33	5,328,824		Ward et al.	7/1994	
	34	5,356,786		Heller et al.	10/1994	
	35	5,391,272		O'Daly et al.	02/1995	
	36	5,403,451		Riviello et al.	4/1995	
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	39	5,449,767		Ward et al.	9/1995	
	40	5,472,881		Beebe et al.	12/1995	
	41	5,476,928		Ward et al.	12/1995	
	42	5,552,270		Khrapko et al.	9/1996	

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	43	WO	86/05815	A1	Genentics International Inc.	03/1985		
	44	WO	90/05732	A1	Columbia Univ.	5/1990		
	45	WO	92/10757	A1	Boehringen Mannheim	6/1992		
	46	WO	93/22678	A2	Mass Inst. of Tech.	11/1993		
	47	WO	93/10267	A1	IGEN, Inc.	5/1993		
	48	WO	94/22889	A1	Cis Bio International	10/1994		
	49	WO	95/15971	A2	Calif. Inst. of Technology	6/1995		
	50	WO	96/40712	A1	Calif. Inst. of Technology	12/1996		

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	51	5,565,552		Magda et al.	10/1996	
	52	5,571,568		Ribi et al.	11/1996	
	53	5,573,906		Bannwarth et al.	11/1996	
	54	5,591,578		Meade et al.	1/1997	
	55	5,595,908		Fawcett et al.	1/1997	
	56	5,601,982		Sargent et al.	2/1997	
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	58	5,632,957		Heller et al.	05/1997	
	59	5,700,667		Marble et al.	12/1997	
	60	5,705,348		Meade et al.	1/1998	
	61	5,741,700		Ershov et al.	4/1998	
	62	5756,050		Ershov et al.	5/1998	
	63	5,770,369		Meade et al.	6/1998	
	64	5,770,721		Ershov et al.	6/1998	
	65	5,776,672		Hashimoto et al.	7/1998	
	66	5,780,234		Meade et al.	7/1998	
	67	5,795,453		Gilmartin et al.	08/1998	

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	68	WO	97/01646	A2	Univ. of N. Carolina	1/1997		
	69	WO	97/31256	A3	Cornell Res. Foundation	08/1997		
	70	WO	97/44651	A1	AU Membrane and	11/1997		
	71	WO	97/27329	A1	Univ. of Chicago	7/1997		
	72	WO	97/41425	A1	Univ. of Alberta	11/1997		
	73	WO	98/20162	A2	Clinical Micro Systems	5/1998		
	74	WO	98/27229	A1	Univ. of Chicago	6/1998		
	75	WO	98/28444	A2	Univ. of Chicago	7/1998		
	76	WO	98/35232	A2	Univ. of N. Carolina	8/1998		
	77	WO	98/51823	A1	Mosaic Technology	11/1998		

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Sheet | of 12

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	78	5,824,473		Meade et al.	10/1998	
	79	5,837,859		Teoule et al.	11/1998	
	80	5,849,486		Heller et al.	12/1998	
	81	5,851,772		Mirzabekov et al.	12/1998	
	82	5,952,172		Meade et al.	9/1999	
	83	6,060,023		Maracas	05/2000	
	84	6,060,327		Keen	05/2000	
	85	6,071,699		Meade et al.	06/2000	
	86	6,087,100		Meade et al.	07/2000	
	87	6,096,273		Kayyem et al.	08/2000	
	88	6,096,825		Garnier	08/2000	
	89	6,107,080		Lennox et al.	08/2000	
	90	6,177,250		Meade et al.	01/2001	
	91	6,180,352		Meade et al.	01/2001	
	92	6,200,761		Meade et al.	03/2001	
	93	6,238,870		Meade et al.	05/2001	
	93a	5,705,346		Okamoto et al.	01/1998	

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	94	WO	98/57159	A1	Clinical Micro Systems	6/1997		
	95	WO	99/57319	A1	Clinical Micro Systems	11/1999		
	96	WO	99/67425	A2	Clinical Micro Systems	12/1999		
	97	WO	99/14596	A1	AB Sangtec Medical	3/1999		
	98	WO	99/37819	A2	Clinical Micro Systems	07/1999		
	98a	WO	99/29711	A1	Nanogen Inc.	06/1999		

Examiner Signature		Date Considered	

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Sheet	5	of	12

Complete if Known	
Application Number	09/866,067
Filing Date	May 23, 2001
First Named Inventor	Meade et al.
Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	A-58762-20/RFT/RMS/RMK

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	99	Aizawa et al., "Integrated Molecular Systems for Biosensors," Sensors and Acuators B, B@$ (Nos 1/3) Part 1:1-5 (March 1995).	
	100	Albers et al., "Design of Novel Molecular Wires for Realizing Long-Distance Electron Transfer," Biochemistry and Bioenergetics, 42:25-33 (1997).	
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	104	Barisci et al., "Conducting Polymer Sensors," *TRIP*, 4(9):307-311 (1996).	
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	107	Bidan, "Electroconducting conjugated polymers: new sensitive matrices to build up chemical or electrochemical sensors. A Review.," *Sensors and Actuators*, B6:45-56 (1992).	
	108	Biotechnology and Genetics: Genetic Screening Integrated Circuit," *The Economist* (February 25-March 3, 1995).	
	109	Blonder et al., "Three-dimensional Redox-Active layered Composites of Au-Au, Ag-Ag and Au-Ag Colloids," Chem. Commun. 1393-1394 (1998).	
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	111	Boon et al., "Mutation Detection by Electrocatalysis at DNA- Modified Electrodes," Nature Biotechnology, 18: 1096-1100 (October 2000).	
	112	Bowler, B. E., et al., "Long-Range Electron Transfer in Donor (Spacer) Acceptor Molecules and Proteins," *Progress in Inorganic Chemistry: Bioinorganic Chemistry*, 38:259-322 (1990).	
	113	Brun, A. M., et al., "Photochemistry of Intercalated Quaternary Diazaaromatic Salts," *J. Am. Chem. Soc.*, 113:8153-8159 (1991).	
	114	Bumm, et al., "Are Single Molecular Wires Conducting?," *Science* 271:1705-1707 (1996).	
	115	Cantor, C.R. et al., "Report on the Sequencing by Hybridization Workshop," *Genomics*, 13:1378-1383 (1992).	
	116	Carr et al., "Novel Electrochemical Sensors for Neutral Molecules," *Chem. Commun.*, 1649-1650 (1997).	
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Examiner Signature		Date Considered	

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Filing Date	May 23, 2001
First Named Inventor	Meade et al.
Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	A-58762-20/RFT/RMS/RMK

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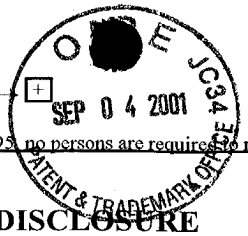

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				Complete if Known	
				Application Number	09/866,067
				Filing Date	May 23, 2001
				First Named Inventor	Meade et al.
				Group Art Unit	Not Yet Assigned
				Examiner Name	Not Yet Assigned
Sheet	12	of	12	Attorney Docket Number	A-58762-20/RFT/RMS/RMK

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
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	218	Turro, N., et al. "Photoelectron Transfer Between Molecules Adsorbed in Restricted Spaces," *Photochem. Convers. Storage Sol. Energy, Proc. Int. Conf., 8th,* pp 121-139 (1990).	
	219	Uosake, K., et al., "A Self-Assembled Monolayer of Ferrocenylalkane Thiols on Gold as an Electron Mediator for the Reduction of Fe(III)-EDTA in Solution," *Electrochemica Acta.,* 36(11/12):1799-1801 (1991).	
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	230	Zhou, et al., "Fluorescent Chemosensors Based on Energy Migration in Conjugated Polymers: The Molecular Wire Approach to Increased Sensitivity," *J. Am. Chem. Soc.,* 117:12593-12602 (1995).	

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